UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,914	12/27/2001	Birgit Linhart	0273-0006	6890

7590 09/24/2003

Shanks & Herbert
TransPotomac Plaza
Suite 306
1033 N. Fairfax
Alexandria, VA 22314

EXAMINER
HINES, JANA A

ART UNIT	PAPER NUMBER
1645	13

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

File Copy

Office Action Summary	Application No.	Applicant(s)	
	10/026,914	LINHART ET AL.	
	Examiner	Art Unit	
	Ja-Na Hines	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9,13-15 and 20-25* is/are pending in the application.

4a) Of the above claim(s) *7,9 and 22-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,13-15,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-6, 13-15 and 20-21in Paper No. 12 is acknowledged. Claims 7 and 22-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 12. Therefore, claims 1-6, 13-15 and 20-21 are under consideration in this office action.

Claim Objections

2. Claims 20 and 21 are objected to because of the following informalities: In particular claim 20 is dependent on non-elected claims 7 and 9. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 13-14 are drawn to a method for preparing a hybrid polypeptide according to claim 1 comprising providing a polynucleotide encoding the hybrid polypeptide, introducing the polynucleotide into a host cell; culturing it and recovering the expressed hybrid polypeptide.

The specification and claims lack sufficient written description of the polynucleotide encoding the hybrid polypeptide. There is no description of the nucleic acids that must encode the hybrid polypeptide. The instant specification does not provide for the structure of the polynucleotide. The specification does not provide a teaching of the entire structure, showing that nucleic acids were isolated at the time the invention was made. The specification does not contain a structural characterization of the complete sequence. There is no adequate description of the nucleic acids which must encode the polypeptide. There is no description of the polynucleotide which encodes the hybrid polypeptide. Since the claim language embraces lots of variants and there is no description of the nucleic acids which encodes such, the description is insufficient since there is no structure described.

The polynucleotide is described by its function, i.e., the ability to encode the hybrid polypeptide; this description is not sufficient to define the polynucleotide itself. The description of the ability of the claimed nucleic acid to encode the hybrid polypeptide may describe the polynucleotides function; however it does not describe the polynucleotide itself. The encoding distinction is a purely functional distinction. Thus, a

description of the polynucleotide by what it does, such as encoding a hybrid polypeptide is insufficient.

The specification does not provide evidence that any polynucleotide, as claimed, functions with the ability to encode the hybrid polypeptide. In view of the lack of evidence, it is apparent that Applicants were not in possession of polynucleotides which encode the hybrid polypeptide, at the time of filing the instant application. The skilled artisan cannot envision the detailed structure of the polynucleotide, thus conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. An adequate description requires more than a mere statement that it is part of the invention. The polynucleotide itself is required. See *Fiers v. Revel*, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016. The encoding distinguishes the claimed polynucleotides from unclaimed sequences only by what they do, which is a purely functional distinction. Even where there is an actual reduction to practice, which may demonstrate possession of an embodiment of an invention, it does not necessarily describe what the claimed invention is. The instant specification and claims fail to describe a polynucleotide, it is noted that the function of the polynucleotide does not describe the claimed polynucleotide itself.

See also, *In The Reagents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), where the court held that a generic statement that defines a genus of nucleic acids by only their functional activity does not provide an adequate description of the genus. The court indicated that while Applicants are not required to disclose

every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

Thus, in view of the absence of sequence information of the polynucleotide, the specification fails to meet the written description requirements. In view of these considerations, a person of skill in the art would not have viewed the teachings of the specification sufficient to show that Applicants were in possession of the nucleic acid molecules as instantly asserted. Therefore the full breadth of the claims fails to meet the written description provision of 35 USC 112, first paragraph.

4. Claims 4-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 4-5 recite the phrase "allergenic protein from which it is derived" however it is unclear how to define "derived". The derivative language is vague and indefinite because the characteristics needed to determine whether an unknown could be considered a derivative of the allergenic protein are unknown. The specification neither discloses a definition for a derivative, nor does it teach a requisite amount of retained qualities needed or characteristics necessary to determine derivatives of allergenic proteins. Therefore the claims are unclear.

The term "substantially reduced" in claims 4-5 is a relative term which renders the claim indefinite. The term is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how to determine the metes and bounds of the term, because it is unclear how much reduction is required for substantial reduction of allergenic activity. Therefore clarification is required to overcome the rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4-6,13-15 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by King (US Patent 5,804,201).

The claims are drawn to a hybrid polypeptide comprising at least two different allergenic proteins or fragments thereof wherein each fragment consists of at least eight consecutive amino acids of the respective allergenic protein. The dependant claims are drawn to a method for preparing a hybrid polypeptide using PCR technology or chemical synthesis and the polypeptide comprised within a pharmaceutical composition.

King teaches immunomodulatory peptides of vespid antigen 5. Venom allergens from insects have been extensively studied and Table 1 list venom allergens from a

variety of insects (col. 1 lines 29-35). Vespid antigen 5 is from several species each of hornets, yellow jackets and paper wasps and have been cloned and/or sequenced (col. 2 lines 42-45). The hornet has three forms of antigen 5. Both fire ant venom and honeybee venom have four allergens (col. 2-3 lines 55-15). The complete amino acid sequence of several major allergens is known and even though the allergens have different biological functions some still share sequence similarity to other proteins in our environment (col. 3 lines 19-36). The invention presents immunodominant peptides of vespid venom antigen 5 and other corresponding peptides from other antigens such as fire ant Sol i3 (col. 6 lines 50-54). King teaches recombinant polypeptides that comprise two or more peptides non-contiguously arranged relative to the native sequence of vespid antigen 5. The immunodominant peptides should comprise at least eight amino acid residues (col. 18 lines 40-45). Recombinant refers to polypeptides genetically engineered or polypeptides created by combination or recombination of non-contiguous immunodominant peptide fragment of vespid venom antigen (col. 12 lines 3-10). The peptides can be prepared by recombinant DNA techniques using transformed host cell that have sequences encoding the peptides (col. 18 lines 40-65). DNA techniques include all conventional techniques including molecular cloning, oligonucleotide synthesis, nucleic hybridization and PCR techniques known within the skill of the art (col. 19lines 24-44). The peptides can also be produced by chemical synthesis or chemical cleavage (col. 9 lines 60-7). The fragments may be from the same species, antigen 5 peptides from different species, consensus antigen 5, or any combination (col. 12 lines 10-15). The recombinant polypeptides can have two or more peptides selected

from SEQ ID NO:8, 9, 12, 13, 16, 22, 23, 26, 42, 43, 44 or their respective homologs. The recombinant polypeptides substantially reduce allergenic activity as seen in the stimulation indexes provided by King. The invention also provides pharmaceutical compositions effective for treating vespid-allergen specific allergic conditions (col. 6-7 lines 61-4; col. 28 lines 57-65; and col. 30 lines 25-67).

Since the Patent Office does not have the facilities for examining and comparing applicants' polypeptide with the polypeptide of the prior art reference, the burden is upon the applicants to show an unobvious distinction between the material structural and functional characteristics of the claimed peptide of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Therefore King teaches a hybrid polypeptide comprising at least two different allergenic proteins or fragments such as the vespid venom allergens wherein each fragment consist of at least eight consecutive amino acids of the respective allergenic protein as described by the sequence identifying numbers. King also teaches a method for preparing a hybrid polypeptide using PCR technology or chemical synthesis comprising the same steps as those recited by the instant claims. Finally, King teaches the hybrid polypeptide comprised within a pharmaceutical composition.

6. Claims 1-3 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Vrtala et al., (1996. J. Allergy Clin. Immun. Vol. 97(3): 781-787).

The claims are drawn to a hybrid polypeptide comprising at least two different allergenic proteins or fragments thereof wherein each fragment consists of at least eight consecutive amino acids of the respective allergenic protein. The dependant claims are

drawn to polypeptides comprising one or two complete allergen proteins and a method for preparing a hybrid polypeptide using PCR technology.

Vrtala et al., teach grass pollen allergens belong to the potent elicitors of type I allergy (abstract). Vrtala et al., teach that DNA coding for three major timothy grass pollen allergens representing group I (Phl p1), group II (Phl p 2) and group V (Phl p 5) was known (page 781). There is no relevant immunologic similarity between Phl p 2 and Phl p 1(page 781). The methods section teaches the construction of the expression plasmids for Phl p 1, Phl p 2 and Phl p 5 (page 782). cDNA clones were transcribed by polymerase chain reaction to DNA fragments coding for the mature allergens (page 782). Phl p 1 and Phl p 2, both of which contained ATG start codon in front of the coding region of the mature protein and genes were then inserted as fragments (page 782). The plasmids were transfected into *E.coli* host cells. The expression of the recombinant allergens in *E.coli* was also taught wherein cells were cultured, expressed, purified and thereby recovered (page 782).

Since the Patent Office does not have the facilities for examining and comparing applicants' polypeptide with the polypeptide of the prior art reference, the burden is upon the applicants to show an unobvious distinction between the material structural and functional characteristics of the claimed peptide of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Therefore Vrtala et al., teach a hybrid polypeptide comprising at least two different allergenic proteins, specifically the timothy grass pollen allergens Phl p1 and Phl p 2. These are the complete allergenic proteins as the CDNA used codes for the

mature protein. Vrtala et al., also teach a method for preparing a hybrid polypeptide using PCR technology comprising the same steps as recited by the instant claims.

Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Garman et al., teach T cell epitopes of the major allergens Der p I, Der p II, Der f I, or Der f II from Dermatophagoides (house dust mites). Vrtala et al., (1997) teach conversion of the major birch pollen allergen into two nonanaphylactic T cell epitope-containing fragments. Yuuki et al., teach protein allergens of DERF II and compositions.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ja-Na Hines whose telephone number is 703-305-0487. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith can be reached on 703-308-3909. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Ja-Na Hines
September 16, 2003

LYNETTE R. F. SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600